4 OPERATING THE BIOMEK® 2000 AUTOMATION WORKSTATION

NOTE: Each regional laboratory has at least two Project Coordinators (qualified examiners) and one primary operator for the BioMek® 2000 Automation Workstation, with a minimum of two primary operators in the Central Laboratory. The training in this section is primary operator training which will be conducted under the direct supervision of the Project Coordinator.

The BioMek® 2000 Automation Workstation training program for the Forensic Laboratory Specialist (FLS) is designed in a modular format. Therefore, the FLS may be trained to conduct each task sequentially or one task (i.e., DNA isolation, quantitation, dilution and amplification) outlined in this section at a time. As the FLS completes each of these duties, the corresponding checklist will be completed by the Project Coordinator.

4.1 GOAL

4.1.1 To assist examiners by becoming the primary operator of the BioMek® 2000 Automation Workstation.

4.2 TASKS

4.2.1 Read and become familiar with the Commonwealth of Virginia Department of Forensic Science Forensic Biology Section Procedure Manual, Section IV - BioMek® 2000 Automation Workstation Procedure Manual.

4.2.2 Learn about the overall operation of the BioMek® 2000 Automation Workstation, including each step of the BioWorks™ program, and the programs used with the DNA IQ™ System, the AluQuant® Human Quantitation System, the Normalization Wizard and amplification set up processes.

4.2.3 Learn to initiate the appropriate DNA IQ™ System program.

4.2.3.1 Observe the Project Coordinator set up the BioMek® 2000 Automation Workstation to run the DNA IQ™ System program.

4.2.3.2 Under the direction of the Project Coordinator set up the workstation to run the DNA IQ™ System program. Run a set of samples consisting of at least 56 water blanks containing Bromophenol Blue dye.

4.2.3.3 Run a second set of samples on a different day consisting of at least 56 water blanks containing Bromophenol Blue dye. Do the DNA isolation, set up the deck, and run the program under the direct supervision of the Project Coordinator.

4.2.3.4 Isolate DNA from a minimum of 60 casework samples in a minimum of 5 runs under the direct supervision of the Project Coordinator and complete the appropriate documentation each time. The samples should include a combination of blood and buccal samples, as well as mixture samples requiring differential extraction. The number of runs may be increased depending on whether the trainee is experiencing difficulties.

4.2.4 Learn to initiate the appropriate AluQuant® Human Quantitation System program, to include the AluQuant® Calculator, and the program for the operation of the luminometer.

4.2.4.1 Observe the Project Coordinator set up the BioMek® 2000 Automation Workstation to run the AluQuant® Human Quantitation System program and the program for the operation of the luminometer.

4.2.4.2 Under the direction of the Project Coordinator set up the workstation to run the AluQuant® Human Quantitation System program and to operate the luminometer. Run a set of samples containing concentrations of 4, 2, 1, 0.5, 0.25, 0.125, 0.062, and 0.031 ng/µL of DNA.

4.2.4.3 Set up the workstation again on a different day to run the AluQuant® Human Quantitation System program and to operate the luminometer. Run another set of samples containing concentrations of 4, 2, 1, 0.5, 0.25, 0.125, 0.062, and 0.031 ng/µL of DNA. Do the DNA quantitation, set up the deck, and run the program under the direct supervision of the Project Coordinator

4.2.4.4 Under the supervision of the Project Coordinator, use the workstation and the AluQuant® Human Quantitation System program to quantitate DNA from a minimum of 60 casework samples in a minimum of 5 different runs and complete the appropriate documentation each time. The number of runs may be increased depending on whether the trainee is experiencing difficulties.

4.2.5 Learn how to clean and maintain the luminometer.

4.2.6 Learn to initiate the appropriate Normalization Wizard and amplification set up programs.

4.2.6.1 Observe the Project Coordinator set up the BioMek® 2000 Automation Workstation to run the Normalization Wizard and amplification set up programs.

4.2.6.2 Set up the workstation to run the Normalization Wizard and amplification set up programs. Run a set of 20 samples using water and the AluQuant® Calculator values from a previous run.

4.2.6.3 Set up the workstation again on a different day to run the Normalization Wizard and amplification set up programs. Run a set of 20 samples using water and the AluQuant® Calculator values from a previous run.

4.2.6.4 Under the supervision of the Project Coordinator, use the workstation and the Normalization Wizard program to dilute the DNA and set the samples up for amplification. A minimum of 60 casework samples in a minimum of 5 different runs will be performed, completing of the appropriate documentation each time. The number of runs may be increased depending on whether the trainee is experiencing difficulties.

4.2.7 Learn to initiate the BioMek® 2000 Workstation calibration programs and to perform the position calibration/precision test that will be conducted on a weekly basis, and the left side module, base module, and the shaker alignments/verification that will be conducted on a monthly basis.

4.2.7.1 The procedures for performing these calibrations can be found in the Commonwealth of Virginia Department of Forensic Science Forensic Biology Section Procedure Manual, Appendix C of Section IV - BioMek® 2000 Automation Workstation Procedure Manual.

4.2.8 Learn to initiate the 1.5 mL Tube Transfer program.

4.2.8.1 Observe the Project Coordinator perform the transfer of the extracted DNA from a 0.2 mL tube to a labeled 1.5 mL tube utilizing the BioMek® 2000 Workstation.

4.2.8.2 Under the supervision of the Project Coordinator, use the workstation and 1.5 mL Tube Transfer program to transfer the extracted DNA from a 0.2 mL tube to a labeled 1.5 mL tube. A minimum of 5 different transfers of casework samples will be performed.

4.3 TRAINING EVALUATION

4.3.1 Evaluation of documentation skills by the Project Coordinator.

4.3.2 The FLS should understand and be able to independently operate the BioMek® 2000 Workstation. This will be evaluated and monitored throughout the training.

4.3.3 Completion of the checklist by the Project Coordinator. The original checklist signed and dated by the Project Coordinator will be forwarded by the supervisor to the Laboratory Director or their designee in accordance with the Department Quality Manual.

CHECKLIST FOR OPERATING THE BIOMEK® 2000 AUTOMATION WORKSTATION

Name of Trainee:_____

1. Trainee can independently operate the BioMek® 2000 Automation Workstation to perform the DNA IQ™ Isolation procedure, including deck setup, and accurately complete the appropriate documentation.

   Date:_____ Project Coordinator:_____

   Comments:_____

2. Trainee can independently perform the BioMek® 2000 Automation Workstation calibration programs, the position calibration/precision test, and the base module and left side module alignments and can accurately document the results.

   Date:_____ Project Coordinator:_____

   Comments:_____

Qualified by:_____Date:_____
Project Coordinator and Supervisor

3. Trainee can independently operate the BioMek® 2000 Automation Workstation to perform the AluQuant® Human Quantitation procedure, including deck setup and accurately complete the appropriate documentation.

   Date:_____ Project Coordinator:_____

   Comments:_____

4. Trainee has learned how to clean and maintain the luminometer.

   Date:_____ Project Coordinator:_____

   Comments:_____

Qualified by:_____Date:_____
Project Coordinator and Supervisor

5. Trainee can independently operate the BioMek® 2000 Automation Workstation to perform the diluting of the samples using the Normalization Wizard and to set up the samples for amplification, including deck setup and accurately complete the appropriate documentation.

   Date:_____ Project Coordinator:_____

   Comments:_____

6. Trainee can independently operate the BioMek® 2000 Automation Workstation to perform the 1.5 mL Tube Transfer procedure.

   Date:_____ Project Coordinator:_____

   Comments:_____

Qualified by:_____**Date:**_____
Project Coordinator and Supervisor

7. Trainee understands the operation of the BioMek® 2000 Automation Workstation (to included the luminometer) enough to be able to recognize when a problem arises, when to seek assistance, and when appropriate, to manually shut down the system. NOTE: The following listed tasks will be signed off in association with completion of the above list category and date of qualification.

   - BioMek® 2000 Automation Workstation to perform the DNA IQ™ Isolation procedure:

     Date:_____ Project Coordinator:_____

     Comments:_____

   - BioMek® 2000 Automation Workstation to perform the AluQuant® Human Quantitation procedure

     Date:_____ Project Coordinator:_____

     Comments:_____

   - Luminometer to perform the AluQuant® Human Quantitation procedure

     Date:_____ Project Coordinator:_____

     Comments:_____

   - BioMek® 2000 Automation Workstation to perform the diluting of the samples using the Normalization Wizard and to set up the samples for amplification

     Date:_____ Project Coordinator:_____

     Comments:_____

♦END